LYKOVA, O.B.

21-6-1/22

AUTHOR: Lykova, O.B.

TITLE: On the Behavior of Solutions of Differential Equations in the Neighborhood of Closed Orbits (O povedenii resheniy sistemy differentsial'nykh uravneniy v okrestnosti zamknutykh orbit)

PERIODICAL: Dopovidi Akademii Nauk Ukrains'koi RSR, 1957, No 6, pp 535-538 (USSR)

ABSTRACT: A system of differential equations of the following form is considered:

$$\frac{dx}{dt} = X(x) + X^*(t,x,\varepsilon),$$

where ε - is a small positive parameter, x, X, X* - are n-dimensional vectors in Euclidean space. Making certain assumptions, the existence and uniqueness of an exact two-parametric family of particular solutions of this system is proved. This family of solutions has the property of attracting any solutions of the system whose initial values are sufficiently close to it.
The article contains 1 Slavic reference.

Card 1/2

21-6-1/22

On the Behavior of Solutions of Differential Equations in the Neighborhood of Closed Orbits

ASSOCIATION: Institute of Mathematics of the AN Ukrainian SSR (Instytut matematyky AN URSR)

PRESENTED: By N.N. Bogolyubov (Ukr. spelling: M.M. Boholyubov), Member of the AN USSR.

SUBMITTED: 6 March 1957

AVAILABLE: Library of Congress

Card 2/2

LYKOVA, O. B.

Single-frequency oscillations in systems with slowly changing
parameters [with summary in French]. Ukr.mat.zhur. 9 no.2:155-162
'57.   (MIRA 10:7)
                        (Differential equations)

LY NOVA, O. B.

20-3-6/59

AUTHOR: Lykova, O. B.,

TITLE: On the Behavior of a System of Differential Equations in the Environment of an Isolated Static Solution (O povedenii resheniy sistemy differentsial'nykh uravneniy v okrestnosti izolirovannogo staticheskogo resheniya)

PERIODICAL: Doklady Akad. nauk SSSR, 1957, Vol.115, Nr 3, pp. 447-449,(USSR)

ABSTRACT: The author examines the system of differential equations $dx/st = X(x) + \mathcal{E}X^*(t,x,\mathcal{E})$, where $\mathcal{E}$ is a small positive parameter. The author makes the following assumptions: a) The system of unperturbed equations $dx/dt = X(x)$ has an isolated static solution which corresponds to the center of gravity $x=0$, $X(x)=0$, $(X_x'(0) \neq 0)$. b) In the domain $-\infty < t < \infty$, $x \in U_{\sigma_0}$, $0 < \mathcal{E} < \mathcal{E}_\sigma$ (where U_{σ_0} is the σ_0 environment of the point $x = 0$) the functions $X(x) + \mathcal{E}X^*(t,x,\mathcal{E})$ are with the period 2π periodic with regard to t and they have limited and uniformly continuous derivatives of any order with respect to $x, \mathcal{E}$. c) For the variation equations $d\delta x/dt = X_x'(0)\delta x$ which correspond to the solution $x = 0$, $X(0) = 0$ $(X_x'(0) \neq 0)$ the characteristic equation $|J_n z - A| = 0$ $(A = X_x'(0))$ has a pair of purely imaginary roots $(z_1 = i\omega, z_2 = -\omega)$. The other roots $(z_3, \ldots, z_n)$ have negative real part. On these assumptions it can be proved that the initially written system has a single local integral manifold. The parametric representation of this manifold depends on two arbitrary constants and in the course of time all solu-

Card 1/2

On the Behavior of a System of Differential Equations in the 20-3-6/59
Environment of an Isolated Static Solution.

tions whose initial values lie sufficiently close to this manifold
tend toward this integral manifold. The initially given system is
then transformed. A theorem is given for the main solution of the
initially given system. As special case the author examines the
system $dx/dt = Px + \mathcal{E}X^{\Psi}(t,x,\mathcal{E})$. In this connection $\mathcal{E}$ is a small
positive parameter and X^{Ψ} is a n-dimensional vector of the Eucli-
dean space. There are 2 Slavic references.

ASSOCIATION: Institute for Mathematics, AN Ukrainian SSR. (Institut matematiki
Akademii nauk USSR)

PRESENTED: February 25, 1957 by N.N.Bogolyubov, Academician

SUBMITTED: February 25, 1957

AVAILABLE: Library of Congress.

Card 2/2

AUTHOR: Lykova, O.B.   SOV/41-10-3-1/14

TITLE: On the Investigation of the Solutions of a System of
           Differential Equations With a Small Parameter on a Two-Di-
           mensional Local Integral Manifold in the Case "Free of
           Resonance" (Ob issledovanii resheniy sistemy differentsial'-
           nykh uravneniy s malym parametrom na dvumernom lokal'nom
           integral'nom mnogoobrazii v "nerezonansnom" sluchaye)

PERIODICAL: Ukrainskiy matematicheskiy zhurnal,1958,Vol 10,Nr 3,
                                          pp 239 - 250 (USSR)

ABSTRACT: In the present paper the author continues her investigations
           started in [Ref 4] and generalizes the results of Bogolyubov
           [Ref 1]. In [Ref 4] the existence of a two-dimensional local
           integral manifold was proved for the system

           (1) $\frac{dx}{dt} = X(x) + \mathcal{E} X^*(t,x,\mathcal{E})$

           under certain assumptions, and it was shown that (1) is
           equivalent to the system

           (2) $\frac{da}{dt} = \mathcal{E} Q^{(f)}(t,\psi,a,\mathcal{E})$, $\frac{d\psi}{dt} = \omega(a) + \mathcal{E} P^{(f)}(t,\psi,a,\mathcal{E})$

Card 1/2

On the Investigation of the Solutions of a System of   SOV/41-10-3-1/14
Differential Equations With a Small Parameter on a Two-Dimensional
Local Integral Manifold in the Case "Free of Resonance"

on this manifold. Furthermore it is now supposed that $Q^{(f)}$
and $P^{(f)}$ are analytic so that it is possible to investigate
(2) with the aid of the methods of Krylov and Bogolyubov
[Ref 2]. In the free of resonance case where $\omega(a)$ does not
satisfy the asymptotic relation $\omega(a) \approx p/q$, $(p,q) = 1$,
it is shown under certain assumptions that there exists a
family of rigorous stationary solutions which lie on the
manifold

$$x(t) = x^{0}(\psi, a) + \frac{1}{2}\left\{A(\psi, a)f(t, \psi, a, \varepsilon) + \overline{A}(\psi, a)\,\overline{f}\,(t, \psi, a, \varepsilon)\right\}$$

where ψ and a are to be determined from (2). The behavior
of the solutions is determined by $\omega(a_0, \varepsilon)$; if ω is

irrational, then the solutions are quasi-periodic with two
fundamental frequencies, 1 and ω; if ω is rational,
then the solutions are periodic. Every solution which does
not lie on the manifold tends under initial conditions
lying in a certain δ-neighborhood of the manifold to one
of the stationary solutions mentioned above.

There are 4 Soviet references.

SUBMITTED: April 21, 1958 (Kiyev)
Card 2/2

16(1)

AUTHOR: Lykova, O.B. (Kiyev)   SOV/41-10-4-2/11

TITLE: On the Investigation of Individual Solutions of a System of
            Differential Equations With a Small Parameter on a Two-
            Dimensional Local Integral Manifold in the Resonance Case
            (Ob issledovanii individual'nykh resheniy sistemy differentsial'-
            nykh uravneniy s malym parametrom na dvumernom lokal'nom
            integral'nom mnogoobrazii v sluchaye rezonansa)

PERIODICAL: Ukrainskiy matematicheskiy zhurnal, 1958, Vol 10, Nr 4,
            pp 365-374 (USSR)

ABSTRACT: The paper continues the earlier investigations of the author
            $\sqrt{\text{Ref }3,4\_}$. The author considers the behavior of the
            solutions of

$$(1) \quad \frac{dx}{dt} = X(x) + \varepsilon X^*(t,x,\varepsilon)$$

on the two-dimensional local integral manifold S of the
corresponding undisturbed system $\frac{dx}{dt} = X(x)$. In $\sqrt{\text{Ref }3\_}$
it was shown that (1) is equivalent to a system of two equations
of first order

$$(2) \quad \frac{da}{dt} = \varepsilon Q(t,\psi,a,\varepsilon), \quad \frac{d\psi}{dt} = \omega(a) + \varepsilon P(t,\psi,a,\varepsilon).$$

Card 1/2

On the Investigation of Individual Solutions
of a System of Differential Equations With a
Small Parameter on a Two-Dimensional Local
Integral Manifold in the Resonance Case

SOV/41-10-4-2/11

In the present paper the resonance case $\omega(a) \approx \frac{E}{q}$ is
investigated if X^* is periodic in t. Under very numerous
assumptions the existence of a stationary periodic solution
of (1) is proved, to which there tend all other solutions
in the end.
There are 4 Soviet references.

SUBMITTED: April 21, 1958

Card 2/2

LYKOVA, O.B

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SOV/21-59-11-1/27

AUTHORS: Mitropol's'kyy, Yu.O., Corresponding Member, AS UkrSSR, and Lykova, O.B.

TITLE: On Periodic Solutions of Nonlinear Systems of Differ-ential Equations That Come Close to the Autonomous Ones

PERIODICAL: Dopovidi Akademiyi nauk Ukrayins'koyi RSR, 1959, Nr 11, pp 1175-1178 (USSR)

ABSTRACT: Examining a system of nonlinear differential equations (1)

$$\frac{dx}{dt} = X(x) + \varepsilon Y(t,x),$$

where x, X and Y are n-dimensional vectors of Eucli-dean space E_n, ε is a small additional parameter and t is time, the authors prove the existence, unique-ness and stability of the periodic solution for that system and give an estimation of the difference be-tween that solution and its first approximation. They assume that functions $Y(t,x)$ are periodic in t with a period of

2π , that a system of equations $\frac{dx}{dt} = X(x) + \varepsilon Y(x) = \Phi(x),$ (2)

Card 1/3

On Periodic Solutions of Nonlinear Systems of Differential Equations That Come Close to the Autonomous Ones

where eqquation

$$\bar{Y}(x) = \frac{1}{2\pi} \int_0^{2\pi} Y(t,x)dt \qquad (3)$$

among its $x^* = x^*(t)$ solutions has an isolated static solution $x^* = x_0$, for which the equation $\left| J_n z - \Phi_x' \cdot (x_0^*)^0 \right| = 0$ has all its radicals with substractable real parts, and that within Euclidean space E_n there exists a convex area U_p for the $x^* = x^*(t)$ solution of system (2), in which functions $\Phi(x)$ have continuous partial derivatives by x up to the third order inclusively, whereas functions $Y(t,x)$ are limited and satisfying the Lipshits conditions $|Y(t,x)| \leq M$ and $|Y(t,x') - Y(t,x'')| \leq \eta |x'-x''|$ where M and η are additional constants. The first

(5)
(6)

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66645

SOV/21-59-11-1/27

On Periodic Solutions of Nonlinear Systems of Differential Equations That Come Close to the Autonomous Ones

approximation of the periodic solution of system (1) is given in the form: $x1(t)=x_o^*+Dh_1(t)+\epsilon u(t,x_o^*+Dh_1(t))$, (22)

where $h_1(t)$ is the periodic solution of the system of equations

$$\frac{dh_1}{dt} = Hh_1 + \epsilon D^{-1}X'x(x_o^*)u't,x_o^*).$$ (23)

The unique, stable and periodic solution of system (1) is formulated:

$$x(t) = x_o^* + Dh(t) + \epsilon u\left(t,x_o^* + Dh(t)\right).$$

There are 4 references, 1 of which is French, 1 Soviet, 1 Italian and 1 German.

ASSOCIATION: Instytut matematyky AN URSR (Institute of Mathematics, AS UkrSSR)

SUBMITTED: July 1, 1959

Card 3/3

16(1)
AUTHOR: Lykova, O. B.   SOV/41-11-3-3/16

TITLE: On the Stability of Solutions of Systems of Nonlinear Differential
            Equations

PERIODICAL: Ukrainskiy matematicheskiy zhurnal, 1959, Vol 11, Nr 3,
            pp 251-255 (USSR)

ABSTRACT: The author considers the systems

(1) $\dfrac{dx}{dt} = X(x) + \varepsilon X^*(t,x,\varepsilon)$

and
(2) $\dfrac{dx}{dt} = X(x)$,

where ε is a small parameter and X, X^* are n-dimensional vector
functions defined for $-\infty < t < \infty$, $0 < \varepsilon < \varepsilon_0$, and $x \in E_n$. Let $x_0 = 0$
be a statistical solution of (2) and no solution of (1). Let the
characteristic equation $|I_n z - X'_x(0)| = 0$ have a pair of purely
imaginary roots, while the real parts of the other roots are
negative.
Under certain conditions (stronger than those of $[$Ref 3$]$) it is
shown that there exist $\bar{t}$ and $\bar{\varepsilon}$ so that for $t > \bar{t}$ and $\varepsilon < \bar{\varepsilon}$ all

Card 1/2

On the Stability of Solutions of Systems of   SOV/41-11-3-3/16
Nonlinear Differential Equations

        solutions of (1) the initial values of which belong to a certain
domain, come into a δ-neighborhood of $x_0 = 0$ which becomes
arbitrarily small for sufficiently large t and sufficiently
small δ.
The author mentions N.N.Bogolyubov.
There are 4 Soviet references.

SUBMITTED: April 29, 1959

Card 2/2

S/021/60/000/001/001/013
A158/A029

AUTHORS: Mitropol'skyy, Yu.O., Corresponding Member of the AS UkrSSR;
Lykova, O.B.

TITLE: On Periodic Solutions of Non-Automatic Systems in the Case of an
Isolated Originating Solution

PERIODICAL: Dopovidi Akademiyi nauk Ukrains'koyi Radyanskoyi Sotsialistychnoyi
Respubliky, 1960, No. 1, pp. 3 - 6

TEXT: The authors deal with an allegedly existing periodical solution of
a system of nonlinear differential equations closely relating to autonomous equa-
tions when the right-hand additives corresponding to the perturbing forces are
not differentiated. The paper is an amplification of the first author's work
(Ref. 1). No conclusions are drawn and no practically applicable formulas are
offered. There are 2 Soviet references.

ASSOCIATION: Instytut matematyky AN UkrSSR (Institute of Mathematics of the AS
UkrSSR)

SUBMITTED: July 1, 1959

Card 1/1

40515

S/044/62/000/008/015/073
C111/C333

AUTHORS: Mitropol'skiy, Yu. A., Lykova, O. B.

TITLE: On the periodic solutions of a system of differential
           equations with a non-differentiable right side

PERIODICAL: Referativnyy zhurnal, Matematika, no. 8, 1962, 42-43,
            abstract 8B192. ("Bul. Inst. politehn. Iași", 1960, 6,
            no. 3-4, 7-12)

TEXT: Theorems on the existence and uniqueness of the periodic
solution are given for non-linear systems of differential equations

$$\dot{x} = \varepsilon X (t,x) \qquad\qquad (1)$$

with a small parameter ε and a non-differentiable right side. The
result of this paper is, among others, a substantiation of the fact
that one can obtain periodic approximate solutions to (1) by averaging,
i.e., by examining the non-autonomous "averaged" system $\dot{\xi} = \varepsilon \bar{X}(\xi)$,
where

$$\bar{X}(\xi) = \frac{1}{2\pi} \int_0^{2\pi} X(t,\xi) \, dt \ .$$

Card 1/2

On the periodic solutions of a . . .   S/044/62/000/008/015/073
C111/C333

Such a reduction method was already used by M. Urabe (Rzh. Mat., 1959, 3750), if the right side of (1) is integrable with respect to x. The existence of a periodic solution to (1) was proved with the help of the well known Schauder topological fix point theorem. In the uniqueness proof the authors also used the known principle of contracting mappings of Cacciopoli-Banach.

[Abstracter's note: Complete translation.]

Card 2/2

87138

16.3400

S/041/60/012/003/002/011
C111/C222

AUTHOR: Lykova, O.B.

TITLE: On Certain Properties of the Solutions of Systems of Nonlinear Differential Equations With Slowly Varying Parameters

PERIODICAL: Ukrainskiy matematicheskiy zhurnal, 1960, Vol. 12, No. 3, pp. 267 - 278

TEXT: In an earlier paper (Ref. 3) the author considered the system

(1) $\frac{dx}{dt} = X(\tau,x) + \varepsilon X^*(\tau,x,\varepsilon)$,

where x, X, X^* are n-dimensional vectors, $\tau = \varepsilon t$ is the slow time, $\tau \in [0,L]$, L is a finite number. A two - parametric family of approximate solutions can be determined in the following way : By transformation of variables

(2) $x = x^0(\tau,\psi,a) + \frac{1}{2}\left\{A(\tau,\psi,a)h + \overline{A}(\tau,\psi,a)\overline{h}\right\}$

(1) becomes the form

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S/041/60/012/003/002/011
C111/C222

On Certain Properties of the Solutions of Systems of Nonlinear Differential
Equations With Slowly Varying Parameters

$$(3) \quad \begin{cases} \dfrac{d\psi}{dt} = \omega(\tau, a) + P(\tau, \theta, \psi, a, h, \varepsilon) \\[2mm] \dfrac{da}{dt} = Q(\tau, \theta, \psi, a, h, \varepsilon) \\[2mm] \dfrac{dh}{dt} = H(\tau)h + R(\tau, \theta, \psi, a, h, \varepsilon), \quad h = \{h_1, \ldots, h_{n-2}\} \end{cases}$$

h for a fixed a and τ (parameter) are determined from the last n-2 equations
of (3). h is sought as

(4) $\quad h(\tau, \theta, \psi, a, \varepsilon) = \varepsilon h_1(\tau, \theta, \psi, a) + \varepsilon^2 h_2(\tau, \theta, \psi, a) + \cdots$

After a determination of h up to the terms of the order ε^m (m = 1, 2, ...)
h is substituted into the two first equations of (3), and a system for ψ
and a is obtained :

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87138
S/041/60/012/003/002/011
C111/C222

On Certain Properties of the Solutions of Systems of Nonlinear Differential Equations With Slowly Varying Parameters

$$(5) \begin{cases} \dfrac{d\psi}{dt} = \omega(\tau,a) + P(\tau,\Theta,\psi,a,h(\tau,\Theta,\psi,a,\varepsilon),\varepsilon) \\[2mm] \dfrac{da}{dt} = Q(\tau,\Theta,\psi,a,h(\tau,\Theta,\psi,a,\varepsilon),\varepsilon) \end{cases}$$

If the ψ and a are determined from (5) as time-dependent functions with two constants (up to the order ε^m), and if these values and h are substituted into (2) then for a two-parametric family of particular solutions of (1) there follows the representation

$$(6) \quad x = x^0(\tau,\psi(\tau,t,\varepsilon),a(\tau,t,\varepsilon)) + \tfrac{1}{2}\Big\{ A(\tau,\psi(\tau,t,\varepsilon),a(\tau,t,\varepsilon))h(\tau,\Theta,\psi(\tau,t,\varepsilon),a(\tau,t,\varepsilon),\varepsilon) + \overline{A}(\tau,\psi(\tau,t,\varepsilon),a(\tau,t,\varepsilon))\overline{h}(\tau,\Theta,\psi(\tau,t,\varepsilon),a(\tau,t,\varepsilon),\varepsilon)\Big\} .$$

The present paper contains a strong foundation of the mentioned method. The author proves the existence and uniqueness of a strong two-parametric family of solutions of (1). It is shown that the difference between the strong solution and its m-th approximation has the order of ε^{m+1} .

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87138

S/041/60/012/003/002/011
C111/C222

On Certain Properties of the Solutions of Systems of Nonlinear Differential Equations With Slowly Varying Parameters

It is stated that if the initial values of an arbitrary solution of (1) belong to the region of definition of the strong two-parametric solution then the arbitrary solution remains in the neighborhood of the approximate solution.

The author mentions Yu.A. Mitropol'skiy. There are 7 references: 4 Soviet, 1 Polish, 1 American and 1 Italian.

SUBMITTED: February 19, 1960

Card 4/4

88302

16.3400

AUTHORS: Mitropol'skiy, Yu.A., and Lykova, O.B.

TITLE: On the Question on Periodic Solutions of Nonlinear Systems of Equations With a Small Parameter

TEXT: The authors consider the system

(1') $$\frac{dx}{dt} = X(x) + \varepsilon Y(t,x) \quad ,$$

where $\varepsilon > 0$ is a small parameter ; t is the time ; x,X,Y are n-dimensional vectors of the Euclidean E_n , and the following conditions are satisfied :

1. $Y(t,x)$ are continuous and 2π - periodic in t ;
2. The equations

(2) $$\frac{dx}{dt} = X(x) + \varepsilon \overline{Y}(x) = \phi(x) \quad ,$$

where $\overline{Y}(x) = \frac{1}{2\pi} \int_{0}^{2\pi} Y(t,x)dt$, have an isolated statical solution $x^* = x_0^*$

Card 1/5

On the Question on Periodic Solutions of Nonlinear Systems of Equations
With a Small Parameter

among their solutions $x^* = x^*(t)$, for which the characteristic equation

(3) $\qquad |I_n z - \phi'_x (x_0^*)| = 0$

corresponding to the system of equations in variations

(4) $\qquad \dfrac{d\delta x^*}{dt} = \phi'_x (x_0^*) \delta x^*$,

has only roots with a negative real part.

3. There exists a convex neighborhood $U_{\rho_0} \subseteq E_n$ of the solution x_0^* in which the $\phi(x)$ have continuous partial derivatives to x up to the second order.

4. For x, x', x'' $\in U_{\rho_0}$ and all real t it holds

(5)
$\qquad |Y(t,x)| \le M$

$\qquad |Y(t,x') - Y(t,x'')| \le \eta |x' - x''|$

Card 2/5

88302

On the Question on Periodic Solutions of Nonlinear Systems of Equations
With a Small Parameter

where M and η are positive constants.

Under the given assumptions it is shown (theorem 1) that in a certain neighborhood of the solution $x^* = x_0$ of (2) the system (1') has a unique, asymptotically stable, $2\tilde{\pi}$ - periodic solution $x = x(t)$. This solution has the structure $x(t) = x_0^* + Dh(t) + \varepsilon u(t, x_0^* + Dh(t))$, where D is the quadratic constant matrix appearing in the general solution $\delta x^* = D\bar{h}$ of (4) ; h(t) denotes the periodic solutions of a complicated auxiliary system, and u(t,x) is given by

$$(9) \quad u(t,x) = \int_{U \int_0} \Delta_a (x - x_1) \left\{ \int_0^t [Y(t_1,x_1) - \bar{Y}(x_1)] \, dt_1 \right\} dx_1 \quad ,$$

where $\Delta_a(x)$ is defined by

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On the Question on Periodic Solutions of Nonlinear Systems of Equations
With a Small Parameter

$$(6) \qquad \Delta_a(x) = \begin{cases} A_a \left\{ 1 - \dfrac{x^2}{a^2} \right\}^2 & |x| \leq a \ , \\[2mm] 0 & |x| > a \end{cases}$$

and normed by

$$(7) \qquad \int_{E_n} \Delta_a(x)\,dx = 1 \ .$$

Besides, the authors estimate the difference $|x(t) - x_1(t)|$, where $x_1(t)$ is the first approximation of the solution of (1'). Similar results are obtained for the more general system

$$(37) \qquad \frac{dx}{dt} = X(t,x) + \varepsilon Y(t,x) \ ,$$

Card 4/5

88302

S/041/60/012/004/003/011
C111/C222

On the Question on Periodic Solutions of Nonlinear Systems of Equations
With a Small Parameter

where X, Y are continuous and $2\widetilde{\mu}$- periodic in t, the undisturbed system

(38) $\frac{dx}{dt} = X(t,x)$

has an isolated stable $2\widetilde{\mu}$ -periodic solution

(39) $x = x(t)$,

and in a certain neighborhood of (39) the right sides of (37) satisfy
certain conditions of smoothness.
There are 2 Soviet references.

SUBMITTED: May 18, 1960

Card 5/5

LYKOVA, O. B.

"Investigations of the solutions of nonlinear systems close to integrable systems by using of integral manifolds."

Paper presented at the Intl. Symposium on Nonlinear Vibrations, Kiev, USSR, 9-19 Sep 61

Institute of Mathematics, Academy of Sciences of the Ukrainian SSR, Kiev

LYKOVA, O.B.

Study of a nonlinear system of n+m equations with a small
parameter using the method of integral manifolds. Dop. AN
URSR no.10:1267-1271 '62.   (MIRA 18:4)

1. Institut matematiki AN UkrSSR.

41602
S/021/62/000/010/001/008
D251/D308

AUTHOR: Lykova, O.B.

TITLE: Investigation of a non-linear system of n + m equations
              with a small parameter by the method of integral
              manifolds

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR. Dopovidi, no. 10,
              1962, 1267 - 1271

TEXT: The author considers the system of n + m equations with
small parameter

$$\frac{dx}{dt} = X(x, y) + \varepsilon X^*(t, x, y) \qquad \frac{dy}{dt} = Y(t, x, y) \qquad (1)$$

where $x = \{x_1, \ldots, x_n\}$, $y = \{y_1, \ldots, y_m\}$, $X = \{X_1, \ldots, X_n\}$, $X^* = \{X_1^*, \ldots, X_n^*\}$, $Y = \{Y_1, \ldots, Y_m\}$, and the corresponding degenerate
system

$$\frac{dx}{dt} = X(x, y) \qquad \frac{dy}{dt} = 0. \qquad (2)$$

Card 1/2

S/021/62/000/010/001/008
Investigation of a non-linear system ...   D251/D303

It is shown that within a sufficiently small neighborhood of the
2 + m-parametric family of solutions of (2) which is assumed to
exist, there exists for system (1) a unique 2+m-dimensional local
integral manifold which has the property of attracting the trajec-
tories of any solutions of the system proceeding from points in the
neighborhood of the trajectory. The investigation is carried out by
generalizing the method of integral manifolds and by a transforma-
tion to new variables involving functions which satisfy the Lipshits
conditions. It is further shown that on the manifold the original
system of n + m equations (1) is equivalent to a system of 2 + m
equations in the new variables.

ASSOCIATION: Instytut matematyky AN URSR (Institute of Mathematics
            of the AS UkrSSR)

PRESENTED: by Yu.O. Mytropol's'kyy, Academician

SUBMITTED: April 18, 1962

Card 2/2

MITROPOL'SKIY, Yu.A., akademik, otv. red.; BOGOLYUBOV, N.N.,
akademik, glav. red.; LUR'YE, A.I., red.; LYKOVA, O.B.,
kand. fiz.-matem. nauk, red.; NEYTSKIY, V.V., prof.,
red.; PISARENKO, G.S., red.; POGREBYSSKIY, I.B., kand.
fiz.-matem.nauk, red.; KORENBLYUM, B.I., doktor fiz.-
matem.nauk, red.; KOZUBOVSKAYA, I.G., red.; LISOVETS,
A.M., tekhn. red.

[Proceedings of the International Symposium on Nonlinear
Oscillations] Trudy Mezhdunarodnogo simpoziuma po neli-
neinym kolebaniiam. Kiev, Izd-vo AN USSR. Vol.2.[Quali-
tative methods in the theory of nonlinear oscillations]
Kachestvennye metody teorii nelineinykh kolebanii. 1963.
538 p. [Applications of the methods in the theory of non-
linear oscillations to problems in physics and technology]
Prilozheniia metodov teorii nelineinykh kolebanii k zada-
cham fiziki i tekhniki. 1963. 513 p. (MIRA 17:1)

1. International Symposium on Nonlinear Oscillations, Kiev,
1961. 2. Akademiya nauk Ukr.SSR (for Mitropol'skiy).
3. Chlen-korrespondent AN SSSR (for Lur'ye). 4. Chlen-
korrespondent AN Ukr.SSR (for Pisarenko).

LYKOVA, O.B.

Behavior of the solutions to a system of n m differential euqa-
tions near the state of equilibrium. Dop. AN URSR no.5:569-573
'64.   (MIRA 17:6)

1. Institut matematiki AN UkrSSR. Predstavleno akademikom AN Ukr
SSR Yu.A.Mitropol'skim [Mytropol's'kyi, IU.O.].

ACCESSION NR: AP4015115   S/0041/64/016/001/0013/0030

AUTHOR: Ly*kova, O. B. (Kiyev)

TITLE: Investigating the solutions for a system of n + m nonlinear differential equations in the neighborhood of an integral manifold

SOURCE: Ukr. matem. zhurnal, v. 16, no. 1, 1964, 13-30

TOPIC TAGS: nonlinear differential equation, integral manifold, differential equation system

ABSTRACT: The following system of n + m nonlinear differential equations is considered:

$$\frac{dx}{dt} = X(y)\,x + eX^*(t, x, y),$$

$$\frac{dy}{dt} = eY(t, x, y),$$

where x, X*, y, Y are respectively n and m-dimensional vectors, X(y) is an n x n matrix, and e is a small parameter. It is assumed that the function Y(t,x,y) has

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ACCESSION NR: AP4015115

an average with respect to t:

$$Y_0(x, y) = \lim_{T \to \infty} \frac{1}{T} \int_0^T Y(t, x, y)\, dt,$$

The investigation is carried out by considering the auxiliary system

$$\frac{dx}{dt} = X(y)x,$$

$$\frac{dy}{dt} = \varepsilon Y_0(x, y).$$

This system is assumed to have a two parameter family of solutions of the form

$$x = 0, \quad y = y^0(\omega t + \varphi, a) \quad (\omega t + \varphi = \psi),$$

where $y^0(\psi, a)$ is a periodic function of ψ with period 2π and ω is a function of a which satisfies the Lipschitz condition. Under certain conditions it is shown that the original system of equations has a unique local two-dimensional integral

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ACCESSION NR: AP4015115

manifold S. Its parametric representation is given. A system of two equations is presented which represents the original system of n + m equations on the integral manifold S. The manifold S will attract the trajectory of a solution of the system which originates at a point near the surface S. An expression for the convergence is given. Some of the methods used are analogous to those of N. N. Bogolyubov and Yu. A. Mitropol'skiy (Asimptoticheskiye metody* v teorii nolineyny*kh kolebaniy, Fizmatgiz, M. 1958). "The author thanks Yu. A. Mitropol'skiy for his valuable advice and also V. M. Volosov for his constructive remarks." Orig. art. has: 117 equations.

ASSOCIATION: none

SUBMITTED: 19Jul63

SUB CODE: MM

DATE ACQ: 16Mar64

NO REF SOV: 008

ENCL: 00

OTHER: 002

Card 3/3

ACCESSION NR: AP4037436   S/0021/64/000/005/0569/0573

AUTHOR: Ly*kova, O. B.

TITLE: On the behavior of solutions of a system of n+m differential equations in the neighborhood of an equilibrium point

SOURCE: AN UkrRSR. Dopovidi, no. 5, 1964, 569-573

TOPIC TAGS: nonlinear differential equation, nonlinear differential equation solution, integral manifold, existence theorem, Lipshits condition, Lipshits constant, auxiliary equation, equilibrium point solution, equilibrium solution

ABSTRACT: The system of nonlinear differential equations

$$\frac{dx}{dt} = X(y)x + \epsilon X^*(t, x, y), \qquad (1)$$

$$\frac{dy}{dt} = \epsilon Y(t, x, y)$$

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ACCESSION NR: AP4037436

is considered in the neighborhood of a static solution (corresponding to an equilibrium point) of the auxiliary system

$$\frac{dx}{dt} = X(y)x, \qquad \frac{dy}{dt} = \varepsilon Y_0(x, y),\qquad\qquad (2)$$

where $Y_0(x, y) = \lim\limits_{T\to\infty} \frac{1}{T}\int\limits_0^T Y(t, x, y)dt,$ and x and X* and y and Y* are n and m

vectors, respectively;

$$X(y) - n \times n$$

X(y) is an $m \times m$ matrix, and ε is a small additive parameter. The author makes several assumptions and arrives at a theorem which establishes the existence and properties of a local integral manifold of (1) for the special case as stated above. The criteria for the existence of two purely imaginary roots are considered. Original artilce has 16 sets of numbered equations.

ASSOCIATION: Insty*tut matematy*ky* AN UkrRSR (Insitute of Mathematics, AN UkrRSR)

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ACCESSION NR: AP4037436

SUBMITTED: 27Sep63   DATE ACQ: 03Jun64   ENCL: 00

SUB CODE: MA   NO REF SOV: 002   OTHER: 000

Card 3/3

ACCESSION NR: AP4026832   S/0041/64/016/002/0157/0163

AUTHORS: Mitropol'skiy, Yu. A. (Kiev); Lykkova, O. B. (Kiev)

TITLE: Integral manifold of nonlinear differential equations containing slow and fast motions

SOURCE: Ukrainskiy matematicheskiy zhurnal, v. 16, no. 2, 1964, 157-163

TOPIC TAGS: integral manifold, nonlinear differential equation, slow motion, fast motion, local integral manifold, degenerate system, parametric family, periodic solution, decay assumption, characteristic exponent, parametric representation, exponential rate

ABSTRACT: The authors study the following system of $l + m + n$ equations

$$\frac{dx}{dt} = X(y, z) x + \epsilon X_1(t, x, y, z),$$

$$\frac{dy}{dt} = Y(x, z) y + \epsilon Y_1(t, x, y, z), \qquad (1)$$

$$\frac{dz}{dt} = \epsilon Z_1(t, x, y, z),$$

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ACCESSION NR: AP4026832

where x, X_1, y, Y_1 and z, Z_1 are respectively ℓ-, m- and n-vectors; X is an $\ell \times \ell$ matrix, Y is an m x m matrix, $\mathcal{E}$ is a small positive parameter. Several restrictions are placed on this system, including assumptions of decay, and it is proven that (1) has an s+1-dimensional local integral manifold S whose parametric representation has a specific given form. On the manifold S the original system of equations is equivalent to s+1 equations which are given. Any solution of system (1) not lying on the manifold S, whose initial values lie near S, is attracted to the manifold at an exponential rate at the least. Orig. art. has: 21 formulas.

ASSOCIATION: none

SUBMITTED: 26Feb63   DATE ACQ: 16Apr64   ENCL: 00

SUB CODE: MM   NO REF SOV: 004   OTHER: 003

Card 2/2

LYKOVA, O. B. (Kiev)

"Untersuchung von nichtlinearen Differentialgleichungssystemen langsamer und schneller Bewegungen nach der Methode der Integralmannigfaltigkeiten."

report submitted for 3rd Conf on Nonlinear Oscillations, E. Berlin, 25-30 May 64.

L 37716-65   EWT(d)   Pg-4   IJP(c)

ACCESSION NR: AP5001196   S/0041/64/016/006/0752/0768

AUTHOR: Lykova, O. B. (Kiev)

TITLE: On Quasiperiodic Solutions of Almost Canonical Systems

SOURCE: Ukrainskiy matematicheskiy zhurnal, v. 16, no. 6, 1964, 752-768

TOPIC TAGS: Quasiperiodic solution, differential equation, canonical system, almost canonical system, dynamical system

ABSTRACT: The equations of motion

$$\frac{dp}{dt} = -\frac{\partial H}{\partial q}, \quad \frac{dq}{dt} = \frac{\partial H}{\partial p} \tag{1.1}$$

of a dynamical system, where H is the Hamiltonian, and system (1.1) is close to an exactly integrable system, are reduced to the form

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L 37716-65

ACCESSION NR: AP5001196 O

$$\frac{dh}{dt} = eAh + eS_1(\varpi, h, \lambda, e^{\frac{1}{2}}),$$

$$\frac{d\varpi}{dt} = \lambda(I_0) + eS_2(\varpi, h, \lambda, e^{\frac{1}{2}}) \quad (F'_1(I_0) = A),$$ (1. 20)

where the functions S_i (w, h, λ, $e^{1/2}$) (i = 1, 2) are infinitely differentiable with respect to their arguments, have period 2π in w(w_1, ..., w_n), and satisfy the inequalities

$$|S_i(\varpi, 0, \lambda, e^{\frac{1}{2}})| < M_i(e^{\frac{1}{2}}) \to 0 \qquad \text{as} \qquad e^{\frac{1}{2}} \to 0.$$ (1. 21)

The method of successive approximations is used to prove several properties of the solutions of (1. 21) and the existence of quasiperiodic solutions for the system

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ACCESSION NR: AP5001196 $\bigcirc$

$$-\frac{dI}{dt} = -\varepsilon\left[\frac{\partial H_1(w, I_0)}{\partial w} + \frac{\partial^2 H_1(w, I_0)}{\partial I \partial w}(I - I_0)\right] + \varepsilon H_1^{(2)}(w, I, \varepsilon) +$$
$$+ \varepsilon F(I) + \varepsilon F_1(w, I).$$

$$\frac{dw}{dt} = \lambda(I) + \varepsilon H_2(w, I, \varepsilon) + \varepsilon \Phi(w, I), \qquad (1.12)$$

where

$$H(p, q) = H_0(p, q) + \varepsilon H_1(p, q) + \varepsilon^2 \ldots,$$

is the expansion of (1.1) in new variables introduced by means of the formulas

$$\frac{dp}{dt} = -\frac{\partial H_0(p, q)}{\partial q}, \quad \frac{dq}{dt} = \frac{\partial H_0(p, q)}{\partial p}, \qquad (1.2)$$

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ACCESSION NR: AP5001196

and

$$\frac{df}{dt} = -\frac{\partial \overline{H}_s}{\partial \omega} = 0, \quad \frac{d\omega}{dt} = \frac{\partial \overline{H}_e}{\partial f} = \lambda (f) = \text{const} \ (\lambda = \lambda_1, \ldots, \lambda_n), \quad \text{(I. 5)}$$

"In conclusion, the author would like to thank Yu. A. Mitropolskiy for his valuable advice and attention to this paper." Orig. art has: 99 equations.

ASSOCIATION: none

SUBMITTED: 31Jul64   ENC: 00   SUB CODE: MA

NO SOV REF: 006   OTHER: 001

Card 4/4

L 16136-66   EWT(d)   IJP(c)

ACC NR: AP6004644   SOURCE CODE: UR/0041/65/017/005/0043/0053

AUTHORS: Mitropol'skiy, Yu. A. (Kiev); Lykova, O. B. (Kiev)   23
                                                                               22
ORG: none   B
           16, 44, 55
TITLE: Integral manifold of a nonlinear system in Hilbert space

SOURCE: Ukrainskiy matematicheskiy zhurnal, v. 17, no. 5, 1965, 43-53

TOPIC TAGS: differential equation, stability

ABSTRACT: The authors treat
$$\frac{dx}{dt} = X(x) + \varepsilon Y(t, x). \qquad (1)$$

Here ε is a small parameter, $x(t)$, $X(x)$, $Y(t,x)$ are vector functions with values
in Hilbert space $\mathcal{H}$, in a neighborhood of the equilibrium position of
$$\frac{dx}{dt} = X(x), \qquad (2)$$
(the corresponding unperturbed equation). Conditions are given under which (1)
has a two-dimensional local integral manifold S allowing a representation of x.
Spectral conditions sufficient for asymptotic stability of S are presented.

Card 1/2   Z

L 16136-66

ACC NR: AP6004644

The authors express their gratitude to <u>Yu. L. Daletskiy for</u> his valuable comments. Orig. art. has: 48 formulas.

SUB CODE: 12/ SUBM DATE: 12Jun65/ ORIG REF: 010/ OTH REF: 001

Card 2/2

LYKOVA, T., agronom

Seminar at the Exhibition of Achievements of the National Economy of the U.S.S.R. Zemledelie 27 no.2:89-90 F '65.   (MIRA 18:4)

|5.8||0

AUTHORS: Molotkov, R. V., Lykova, T. A.

TITLE: Combination of Unsaturated Polyesters With Epoxy Resins

PERIODICAL: Plasticheskiye massy, 1960, No. 12, pp. 16 - 19

TEXT: The present paper gives results of investigations of some
properties of epoxy-polyester compounds in dependence on their composi-
tion. They were shown to be useful for the production of laminated glass-
reinforced plastics. In this study, mainly the method of thermomechanical
curves devised by V. A. Kargin and co-workers (Ref.5) was applied. In
addition to the thermomechanical characteristics of the cured epoxy-poly-
ester compounds, also the temperature dependence of tan δ was determined.
To produce these compounds, the polyester resins ПН-1 (PN-1), ЭМО (EMO)
(a polycondensation product of ethylene glycol, maleic anhydride and
oleic acid), and ДЭМСО (DEMSO) (a condensation product of diethylene
glycol, maleic anhydride, sebacic acid and oleic acid), as well as the
epoxy resin ЭД-6 (ED-6), were used. Besides, styrene, maleic anhydride,
quinhydrone (inhibitor) and benzoyl peroxide were added. The thermo-

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Combination of Unsaturated Polyesters With   S/191/60/000/012/006/016
Epoxy Resins   B020/B066

mechanical curves were obtained by measuring the deformation at a load of
5 kg at evenly increasing temperature (50°C per hour). Measurements were
made on a modified device for the determination of the dimensional
stability under heat according to Vicat. The tan δ was measured at a
frequency of 50 cps and a gradient of 1 kv/mm by means of a "МДГ" ("MDP")
bridge. A steel vessel was used as high-voltage electrode, the measuring
electrode and the guard ring were made of an aluminum foil. The tempera-
ture of the sample was measured by means of a thermocouple. Resistance to
heat, limit of static flexural strength, and specific resilience of
laminated glass-reinforced plastics were determined according to
respective ГОСТ (GOST) standards. To determine the effect of composition
of epoxy-polyester compounds on their properties, the dependence of
hardness and tan δ at different temperatures on the content of epoxy resin
and maleic anhydride in the compounds was determined (Figs.1-3). Figs.1-3
illustrate the resultant tan δ and hardnesses for several epoxy-polyester
compounds with equal content of styrene, benzoyl peroxide and quinhydrone.
Figs.4 and 5 show the thermomechanical curves for the cured compounds with
the polyester PN-1. When combined with polyesters, the epoxy resin
appreciably improves the temperature dependence of tan δ (Fig.6). In the

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Combination of Unsaturated Polyesters With   S/191/60/000/012/006/016
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table, the properties of PN-1 polyester and an epoxy-polyester compound as
a binding agent for laminated glass-reinforced plastics are summarized,
and the advantages of the latter become evident. Epoxy-polyester binding
agents for laminated glass-reinforced plastics with high resistance to
heat and strength may, thus, be considered quite suitable. O.G.Sherina,
A. A. Frolenkova, and D. E. Bakhmendo, students of the Leningradskiy
politekhnicheskiy institut im. M. I. Kalinina (Leningrad Polytechnic
Institute imeni M. I. Kalinin), assisted in this study. There are
6 figures and 6 references: 4 Soviet, 1 US, and 1 British.

Card 3/3

L 31920-66   EWT(m)/EWP(j)/T   IJP(c)   RM

ACC NR: AT6007971   (A)   SOURCE CODE: UR/0191/66/000/003/0054/0057

AUTHOR: Fotokhina, Ye. S.; Moldavskiy, B. L.; Molotkov, R. V.; Batalin, O. Ye.;
Buslovich, Ye. Yu.; Rubinshteyn, E. I.; Ravkina, A. E.; Khanukova, E. S.; Slo-
bina, A. V.; Lykova, T. A.; Bychkova, V. A.

ORG: none

TITLE: Alkenylsuccinic acid anhydrides as hardening agents for epoxy resins

SOURCE: Plasticheskiye massy, no. 3, 1966, 54-57

TOPIC TAGS: epoxy plastic, hardening, solid mechanical property

ABSTRACT: The authors studied the synthesis and use of alkenylsuccinic acid an-
hydrides as liquid and low-toxic hardening agents for epoxy resins. The anhydrides
were synthesized in an electrically heated steel autoclave with a mixing device by
the reaction of maleic anhydride with monoolefins:

$$R-CH_2-CH=CH + CH=CH \longrightarrow R-CH=CH-CH-CH-CH_2$$
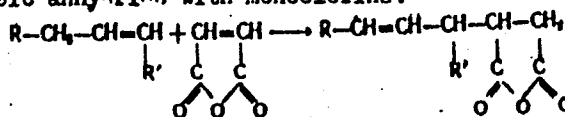
The following anhydrides were prepared: (acid, boiling point in C, at pressure in mm)
crotylsuccinic, 122-147, 8; pentenylsuccinic, 135-148, 8; dodecenylsuccinic, 124-210,

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L 31920-66

ACC NR: AP6007971   2

5; and a mixture of isooctenyl- and isononenylsuccinic (ASA), 155-169, 8. Epoxy resins ED-5, ED-6, and EDL were hardened by ASA at 140C for 24 hr, using 93-115, 73-93- and 47-57 g of ASA over 100 g of epoxy resins respectively. Using dimethyl-aniline or triethanolamine as the accelerators, the hardening process was accomplished within 1.5-2 hr at 100C. With the exception of thermal stability, which was 25-35C lower, the physicomechanical properties of the products obtained resembled very closely those obtained by the use of maleic anhydride as the hardening agent. Orig. art. has: 6 tables, 4 fig., and 1 formula.

SUB CODE: 11,07/ SUBM DATE: none/ ORIG REF: 004/ OTH REF: 003

Card 2/2

MOLOTKOV, Roman Vladimirovich; LYKOVA, Tamara Alekseyevna;
SHALUN, G.B., red.; ALABYSHEVA, N.A., red.izd-va; GVIRTS,
V.L., tekhn. red.

[Premixes, the new molded materials] Novye pressmaterialy -
premiksy. Leningrad, 1963. 19 p. (Leningradskii Dom nauchno-
tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia:
Sinteticheskie materialy, no.4)   (MIRA 17:3)

37712
S/139/62/000/002/005/028
E193/E383

/P. 9200

AUTHORS: Popov, L.Ye. and Lykova, T.K.

TITLE: Investigation of the microstructure of nickel,
            deformed under conditions of anomalous temperature-
            and strain-rate dependence of its resistance to
            deformation

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika,
            no. 2, 1962, 28 - 33

TEXT: Deformation of nickel below 400 $^{\circ}$C has certain
specific features not observed in other metals. To these belong the
non-monotonic character of the relationship established between
the flow stress of nickel at temperatures below 300 $^{\circ}$C on the
one hand, and temperature- and strain rate on the other, the
negative relaxation of nickel at 200 - 250 $^{\circ}$C and the presence of
a maximum on the temperature-dependence of the activation energy
for creep of nickel at temperatures below 500 $^{\circ}$C. The present
investigation was undertaken to obtain additional data on the
nature of these anomalies. To this end, tensile tests were

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Investigation of ....

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E195/E583

carried out on nickel wire specimens, 1 mm in diameter, at two
rates of strain (0.8 and 24% per min) at temperatures varying
between 20 and 600 °C. The specimens were vacuum-annealed at
950 °C, given 20% reduction and then annealed again for 1 hour
at 1 000 °C, the average grain size after this treatment being
0.05 mm. The results of the mechanical tests and metallo-
graphic examination can be summarized as follows.
1) A yield ledge, present on the strain-stress diagram of
specimens tested at room temperature, disappeared at
temperatures higher than 200 °C.
2) The strain-stress curve in the plastic-flow region was
not smooth, the type of irregularity being demonstrated in
Fig. 1, where automatically recorded curves for the test
temperatures of 20, 150, 200 and 300 °C (graphs a, £, ≿ and ⋎)
are reproduced, the top curve in each diagram being taken
at the low rate of strain. The irregular character of the
variation in stress is most pronounced at 200 and 250 °C for
specimens extended at the low rate of strain and at 250 - 300 °C
for the strain-rate of 24% per min.

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                                         E193/E383

3)   Nickel exhibits an anomalous temperature- and strain-rate
dependence of its resistance to deformation, This is demonstrated
in Fig. 2, where the flow stress (σ, kg/mm^2), corresponding to
an elongation of 25%, is plotted against the test temperature
($^{\circ}$C), the crosses and circles represening results obtained at
strain rates of 24 and 0.8% per minute, respectively.
4)   Nickel does not deform uniformly at room temperature, which
is indicated by the distorted surface of the grains, the wavy
slip lines and a large number of short slip lines which do not
extend across the entire grain. The slip lines straighten up
and become longer with rising, temperature, and less distortion
of the surface of the grains takes place. The grain-boundary
regions are heavily deformed at temperatures below 350 $^{\circ}$C,
movement of the grains relative to each other beginning only
above this temperature.
5)   As the temperature rises, the proportion of grains in which
slip in more than one direction occurs changes. This is
demonstrated in Fig. 3, where the proportion (%) of grains
with multiple slip lines is plotted against the test temperature

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Investigation of ....

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E193/E383

($^\circ$C), the three graphs relating to: a) grains with slip
lines in two directions; b) grains with slip lines in three
directions and   ) grains in which certain regions only have
slip lines in two directions, the crosses and circles relating
to results obtained at strain rates of 24 and 0.8% per minute.
The effects observed are discussed in detail in terms of the
effect of temperature and stress on redistribution of impurities
and movement of vacancies and it is concluded that the anomalous
behaviour of nickel deformed at low temperatures is associated
with strain ageing, which takes place in this metal below 300 $^\circ$C.
There are 3 figures.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut pri
               Tomskom gosuniversitete imeni V.V. Kuybysheva
               (Siberian Physicotechnical Institute at Tomsk
               State University imeni V.V. Kuybyshev)

SUBMITTED: December 31, 1960

Card 4/0 1/

L 08325-67   EWT(m)/EWP(t)/ETI/EWP(k)   IJP(c)   JD/HW

ACC NR: AR6033788   SOURCE CODE: UR/0058/66/000/007/E069/E069

AUTHOR: Gorodetskiy, A. F.; Lykova, T. K.   37

TITLE: Effect of plastic deformation on the lifetime of excess carriers in n-type silicon

SOURCE: Ref. zh. Fizika, Abs. 7E521

REF SOURCE: Tr. Novosib. elektrotekhn. in-t svyazi. vyp. 1, 1965, 208-210

TOPIC TAGS: plastic deformation, silicon, deformation, charge carrier, p type silicon, flexing, plastic flexing, dislocation density

ABSTRACT: The photoconductivity compensation method was used to measure the lifetime of nonequilibrium electrons (τ) in Si monocrystals, in which the density of dislocation (DD) was varied by means of plastic flexing of crystals at 950C. It was found that τ is inversely proportional to DD. It is known that τ is also reduced by subjecting crystals to thermal treatment. A comparison of these two methods of decreasing τ showed that in plastic deformation τ may be decreased by more than one order below that obtained through thermal treatment. A. Niliysk. [Translation of abstract]

Card 1/1 nst SUB CODE: 20/

LYKOVA, V. M.

TREGULOVA, Z.I., tekhnik; LYKOVA, V.M.

Making thermo-film indicators using ethyl cellulose lacquer.
Energetik 5 no.10:24-25 O '57.   (MIRA 10:12)
            (Electric contactors)   (Thermometry)

PONOMAREV, A.N.; LYKOVA, Ye.I.

Cleistogamy in the goosefoot family. Dokl. AN SSSR 135 no.5:1262-
1265 D '60.   (MIRA 13:12)

1. Permskiy gosudarstvennyy universitet im. A.M.Gor'kogo. Pred-
stavleno akademikom V.N. Sukachevym.
        (Cleistogamy)   (Goosefoot)

L 23456-66   EWT(d)/EWT(m)/EWP(v)/T/EWP(t)/EWP(k)/EWP(h)   IJP(c)   JD/HM

ACC NR: AP6006332   (N)   SOURCE CODE: UR/0413/66/000/002/0056/0057

AUTHOR: Yakovlev, V. A.; Dubrovskiy, S. M.; Lykova, Z. V.; Berman, A. S.;
Lyubavskiy, K. V.; Antonov, Ye. G.; Smirnov, A. G.; Makhanev, V. I.; Vesenko, N. V.

ORG: none

TITLE: Device for automatic welding of hardening steels. Class 21, No. 177981

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 2, 1966, 56-57

TOPIC TAGS: automatic welding, induction welding, steel

ABSTRACT: An Author Certificate has been issued for a device for automatic welding
of hardening steels. The device consists of an automatic welder and an inductor.
To make it possible to control the heating rate, the welder and conductor have a
movable interconnection which can by adjusted by a screw or a rod.   [LD]

SUB CODE: 13/   SUBM DATE: 31Jan63/   ORIG REF: none/   OTH REF: none/

Card 1/1

UDC: 621.791.037:621.078.012

L 17349-63   EWP(k)/EWP(q)/EWT(m)/BDS   AFFTC   Pf-4   JD/HM
ACCESSION NR: · AP3006477   S/0135/63/000/009/0004/0007

AUTHOR: Lyubavskiy, K. V. (Dr. of technical sciences, Prof.);
Smirnov, A. G. (Engineer); Antonov, Ye. G. (Engineer); Yakovlev,
V. A. (Cand. of technical sciences); Dubrovskiy, S. M. (Engineer);
Ly*kova, Z. V. (Engineer)

TITLE: Automatic welding of 25KhSNVFA steel with induction post-
heating

SOURCE: Svarochnoye proizvodstvo, no. 9, 1963, 4-7

TOPIC TAGS: high strength pearlitic 25KhSNVFA steel, carbon dioxide
shielded automatic welding, automatic submerged arc welding, weld
metal ductility, weld metal strength, weld metal notch toughness,
weld metal microstructure, induction postheating, postheating ef-
fect, combined welding postheating unit, high pressure vessel
welding

ABSTRACT: Heat-treated (hardened and tempered) 25KhSNVFA pearlitic
high-strength steel [0.23—0.25% C; 0.5—0.8% Mn; 0.9—1.2% each of

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L 17349-63

ACCESSION NR: AP3006477 O

bend angle, between 50 and 82°, and the notch toughness, between 5
and 6 mkg/cm^2, compared to 117—121 kg/mm^2, 44—52°, and 3.4—
4.2 mkg/cm^2 for welds not postheated. The induction-heated zone
adjacent to the weld consisted of martensite, bainite, and pearlite
instead of the coarse acicular martensite formed in welds without
postheating. This technique has been successfully employed to
fabricate industrial high-pressure vessels from 25KhSNVFA steel.
The vessels consisted of three cylindrical shells with a wall thick-
ness of 6 mm and two hemispherical end closures formed of 8 mm-
thick plate welded to the cylindrical portion. The closures had
welded-in central pipe connections. All welds were made with a
submerged arc from both sides using 20KhSNVFA filler wire and
AN-15 flux. Separate welding units with induction heaters fed by
a current at 2500 cps were used for making the longitudinal, cir-
cumferential, and circular welds. Orig. art. has: 9 figures
and 2 tables.

ASSOCIATION: none

SUBMITTED: 00   DATE ACQ: 30Sep63   ENCL: 00
SUB CODE: MA   NO REF SOV: 002   OTHER: 000

Cord 3/3

L 17349-63

ACCESSION NR: AP3006477   O

Si, Cr, and Ni; 0.5—1.0% W, 0.05—0.15% V] sheets were welded with
a carbon dioxide shielded arc and Sv-08G2S electrode wire without
backup. Annealed plates 6 mm thick were submerged-arc-welded with
20KhSNVFA electrode wire and AN-15 flux [23.5% SiO_2, 21.0% Al_2O_3,
1.0% Fe_2O_3, 14.0% CaO, 9.3% MgO, 2.7% MnO, 21.3% CaF_2, 0.03% P,
0.03% S] using a copper backup plate. All welds were single-pass
square-butt welds. Induction postheating was applied with an in-
duction heater rigidly attached to the welding head at a distance
of 350 or 500 mm. This distance was found experimentally and de-
termined the weld temperature at which postheating was applied —
620K, about 20K higher than the M_s point. The heater length, 300
or 450 mm, determined duration of heating, 60 or 90 sec; the post-
heating temperature was 770—920K for heat-treated steel welds and
970K for annealed steel welds. It was found that in welding
hardened or annealed steel, the induction postheating significantly
increased the ductility of the weld metal without decreasing the
strength of the joint. For example, the tensile strength of the
postheated joints of heat-treated 25KhSNVFA steel plates welded
with a CO_2 shielded arc varied between 112 and 120 kg/mm², the

Card 2/3

SCHMUCK, Adam; BAC, Stanislaw, prof. dr.; ZILSER, Alina, mgr; LYKOWSKI,
Bonifacy, mgr; GORCZAKOWNA, Maria

Droughts and high precipitation in the Wroclaw Voivodeship,
1950-1959. Czasop geograf 33 no.4:411-440 '62.

1. Katedra Meteorologii i Klimatologii, Wyzsza Szkola Rolnicza,
Wroclaw.

L 4241-66 EWT(1)/ETC/EPF(n)-2/EWG(m)/EPA(w)-2   LJP(c)   OS/AT

ACCESSION NR: AT5007972   S/0000/64/000/000/1017/1022

AUTHOR: Veksler, V. I.; Gekker, I. R.; Gol'ts, E. Ya.; Delone, G. A.; Kononov, B. P.; Kudrevatova, O. V.; Lyk'yanchikov, G. S.; Rabinovich, M. S.; Savchenko, M. S.; Sarksyan, K. A.; Sergeychev, K. V.; Silin, V. A.; Tsopp, L. E.; Levin, M. L.; Muratov, R. Z.

TITLE: Radiational acceleration of plasma

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 1964, 1017-1022

TOPIC TAGS: high energy accelerator, plasma acceleration, plasma waveguide

ABSTRACT: The practical realization of the radiational method of plasma acceleration (Veksler, V. I. CERN Symposium, 1956; Atomnaya energiya 2, 427, 1957) is connected with the utilization of a different kind of waveguide structure, within which a plasma bunch moves under acceleration by an electromagnetic field. Two such waveguide structures, differing in type of accelerating wave and in method of plasma injection, were produced recently in the Physics Institute, AN SSSR. Initial experiments showed that radiational acceleration of plasma was achieved in both of the structures. At the same time the Radiotechnical Institute, AN SSSR,

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L 4241-66
ACCESSION NR: AT5007972   6

carried out a theoretical study of the possibilities of the radiational method.
The present report contains a brief exposition of all these investigations, under
the two headings of: experimental results and theory of radiational acceleration.
Both waveguide structures employed one and the same super high-frequency oscilla-
tor of 10 cm range which operated in the single- stage pulse regime of 8 micro-
seconds duration; the average density of power flux through tube cross-section did
not exceed $8 \cdot 10^3$ watts/cm^2, and the KSVN of the entire waveguide system (without
plasma) was not worse than 1.3. The accelerating waveguides were tubes of circular
cross-section with walls of noncorroding steel 1 mm thick; the vacuum in the tubes
was of the order of 10^{-7} to 10^{-6} mm of mercury. The forces of the radiational
pressure which act upon the plasma bunch are found by proceeding from the conser-
vation laws. In the plane electromagnetic wave propagated in free space the den-
sity of pulse flux equals the average energy density. Orig. art. has: 7 figures,
26 formulas.

ASSOCIATION: Fizicheskiy institut imeni P. N. Lebedeva AN SSSR (Physics Institute,
AN SSSR); Radiotekhnicheskiy institut AN SSSR (Radio Engineering Institute, AN
SSSR)

SUBMITTED: 26May64   ENCL: 00   SUB CODE: NP
NO REF SOV: 008   OTHER: 003

Card 2/2

COUNTRY   : USSR
CATEGORY   : Cultivated Plants.   M
                Grains. Legumes. Tropical Cereals.
ABS. JOUR.   : RZhBiol., No. 3, 1959, No.   10916

AUTHOR   : Lylina, R. I.
INST.   : Don Zonal Scientific Research Institute of Agriculture.
TITLE   : A New Promising Corn Hybrid.

ORIG. PUB.   : Byul. nauchno-tekhn. inform. Donsk. zonal'n. s.-i. in-ta
                s. kh., 1957, 1, 11-13.
ABSTRACT   : The double cross inter-strain hybrid Rostovskiy 33 obtain-
                ed at the Zernogradskaya State Breeding Station surpassed
                the yielding ability of the standard VIR-42 at the com-
                petetive variety and production trials.

CARD: 1/1

-28-

Lylo, V. M.

PHASE I BOOK EXPLOITATION

3(A.7)

Vsesoyuznyy gidrologicheskiy s"yezd, 3rd, Leningrad, 1957.

Trudy...t. III: Sektsiya gidrologii (Transactions of the 3rd All-Union Hydrological Convention. v. 3: Hydrophysics Section) Leningrad, Gidrometeoizdat, 1955. 470 p. Errata slip inserted. 2,000 copies printed.

Sponsoring Agency: Glavnoye upravleniye gidrometeorologicheskoy sluzhby pri Sovete Ministrov SSSR.

Resp. Ed.: V.A. Uryvayev; Ed.: V.S. Protopopov; Tech. Ed.: M.I. Bruynina.

PURPOSE: This work is intended for meteorologists, hydrologists, and hydrophysicists, particularly those engaged in the study of snow and ice and evaporation processes.

COVERAGE: This book contains papers on hydrophysics which were presented and discussed at the Third All-Union Hydrological Conference in Leningrad, October 1957. The Conference published 10 volumes on various aspects of hydrology of which this is number 3. The editorial board in charge of the series include: V.A. Uryvayev (Chairman), O.A. Alekin, Ye.V. Bliznyak, A.P. Domanitskiy, O.M. Boruk, M.A. Velikanov, L.K. Davydov, A.P. Domanitskiy, G.P. Kalinin, S.M. Kritskiy, B.I. Kudelin, L.F. Manoim, M.F. Menkel', B.P. Orlov, I.V. Popov, A.K. Proskuryakov, D.L. Sokolovskiy, O.A. Spengler, A.I. Chebotarev, and S.N. Cherkavskiy. This volume is divided in-to 2 sections: the first contains reports from the subsection for the study of evaporation processes, and the second contains reports from the snow and ice subsection. References accompany each article.

Sokol'nikov, N.M. [Engineer, Lengidep] Problems of the Ice and Thermal Regimen of Rivers and Reservoirs in Water Power Projects 348

Lylo, V.M. [Candidate of Geographical Sciences] Variations in the Thermal-Thermal Regimen of the Angara River During the Filling of the Irkutsk Water Reservoir at a Time of Intensive Sludge Formation 353

Gosilb, Ya. L., Ye.Ye. Zamin, and M.I. Smolin [Engineers] Studying the Winter Regimen of the Angara River while Planning Hydroelectric Power Stations 359

Aleksandrovskiy, Yu.V. [Docent, Candidate of Technical Sciences], and A.V. Klimenko [Engineer] Planning the Winter Level Regimen of the Tail-water of Hydroelectric Power Station 369

Svetitskiy, V.I. [Engineer, SAOGidep, Tashkent] Winter Regimen of the Hydroelectric Power Station of the Chirchik-Bozsuyskiy Cascade 377

Kraahr, V.A. [Candidate of Technical Sciences, OOI Leningrad] Studying the Conditions of Ice Development on Rivers Carrying Sludge Ice 382

Donchenko, R.V. [Candidate of Technical Sciences, OOI Leningrad] Experimental Studies of the Physical Properties of Sludge Ice 391

Berdennikov, V.P. [Candidate of Technical Sciences, OOI Leningrad] Methods for Studying the Formation of Sludge Jams 394

Kravchenko, N.A. [Engineer, UGMS Moldavia, Kishinev] Formation of Ice Blocking on the Dniester River and Methods of Studying Them 401

Bernaley, A.A. [Director of the Observatory, UGMS Lithuania, SSR] Reasons and Mechanics of Ice Blocking on the Nyaman River, Prevention and Control 406

Piotrovich, V.V. [Candidate of Technical Sciences, TsIP Moscow] Results of Studying the Melting Ice Cover on the Kiyev Minskoye Reservoir 412

LYLO, V.M.

Conference on forecasts and calculations of floods caused by rains in rivers of Siberia and the Far East. Meteor. i gidrol. no.1:66-67 Ja '62.   (MIRA 15:1)

(Siberia--Flood forecasting--Congresses)

LYLO, V.M.

Forecasting the elements of the spring flood on the Yana River.
Trudy Dal'nevost. MIGMI no.18:2° 45 '64.

Methodology of forecasting discharges (stages) of the Kamchatka
River during the recession of a flood. Ibid.:46-58   (MIRA 17:11)

GOTLIB, Ya.I., inzh.; LYLO, V.M., kand.geograficheskikh nauk; SMOLIN, N.I.,
inzh.

Ice-temperature conditions of the tail race of the Bratsk Hydro-
electric Power Station. Gidr. stroi. 32 no.1:17 Ja '62.
(MIRA 15:3)
(Bratsk Hydroelectric Power Station--Ice on rivers, lakes, etc.)

CHEBOTAREV, A.I.; GLUBOKOV, V.N.; LYLO, V.M.

       "River ice conditions of the Tom' Basin" by IA. I. Marusenko.
       Reviewed by A.I. Chebotarev, V.N. Glubokov, and V.M. Lylo.
       Meteor. i gidrol. no.10:52-56 0 '62.   (MIRA 15:9)
             (Tom' Valley—Ice on rivers, lakes, etc.)
                   (Marusenko, IA.I.)

LYLO, V.M.

> Forecasting the hydrograph of rain floods of the rivers of
> the Amur basin with the use of electroanalog computers.
> Trudy Dal'nevost. NIGMI no.20:46-85 '65.
>
> (MIRA 18:11)

GOTLIB, Ya.L.; LYLO, V.M.; SMOLIN, N.I.

Calculation of the ice and temperature regime of the tail
water of the Bratsk Hydroelectric Power Station during
operation. Trudy Transp.-energ. inst. Sib. otd. AN SSSR
no.15:45-50 '64.   (MIRA 18:6)

TROITSKIY, I.; LYLOV, D., inzh.

We need powerful fire-extinction equipment. Pozh.delo 5 no.2:28-29
F '59.   (MIRA 12:3)

1.Nachal'nik Upravleniya pozharnoy okhrany Mosgorispolkoma.
                    (Fire extinction)

LYLOV, D.V.; SUSLENNIKOV, V.V.; ZAVOVIT, A.V.; Prinimali uchastiye:
     IVASHIN, N.A.; PIGOLEV, S.V.; AFANAS'YEV, S.G.; TROITSKIY,
     P.S., red.; ZAMYSHLYAYEVA, I.M., red. izd-va; SALAZKOV,
     N.P., tekhn. red.

[Special purpose motor vehicles for fire privention] Avtomo-
bili spetsial'nykh sluzhb pozharnoi okhrany. Moskva, Izd-vo
M-va kommun.khoz.RSFSR, 1960. 274 p.   (MIRA 16:10)
                    (Motor vehicles)
          (Fire departments—Equipment and supplies)

LYLOVA, A.Z.

Experimental study of potato drying process. Trudy MTIPP no.6:90-98 '56.   (MIRA 10:3)

(Potatoes--Drying)

PROKOPENKO, N.A.; LYLOVA, L.N.

Latest in the arsenic-soda process of sulfur removal from gas.
Koks i khim. no. 3:52-54 '61. (MIRA 14:4)

1. Moskovskiy koksogazovyy zavod.
(Moscow—Coke-oven gas) (Gases—Purification)

5.3630

77893
SOV/79-30-2-44/78

AUTHORS: Olifirenko, S. P., Zemlyanskiy, N. I., Lylyk, A. M.

TITLE: Synthesis of Acyl Derivatives of O,O-Dibutylthio-
             phosphoric Acid

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 2, pp 579-580
             (USSR)

ABSTRACT: The synthesis proceeds in the following stages: (1)
             synthesis of dibutylphosphite; (2) obtaining sodium
             dibutylphosphite; (3) synthesis of O,O-dibutyl-
             thiophosphate; (4) synthesis of acyl derivatives of
             O,O-dibutylthiophosphoric acid. Since the synthesis
             of sodium O,O-dibutylthiophosphate was not previously
             described in literature, it is given below. Metallic
             sodium in absolute benzene was stirred with O,O-dibutyl-
             phosphorous acid under water-free conditions. After 20
             hr excess sodium was removed, and powdered sulfur was
             added in small portions with vigorous stirring and cooling.
             After addition, the mixture was heated for 30 min at $60°$ C

Card 1/2

Synthesis of Acyl Derivatives of O,O-Dibutyl-   77893
thiophosphoric Acid   SOV/79-30-2-44/78

and benzene was removed by distillation until crystals
started to form. Final removal of benzene and crystal-
lization were done under reduced pressure. Acyl
derivatives of O,O-dibutylthiophosphoric acid were
obtained by treating the sodium salt with acid chlorides
of benzoic, succinic, glutaric, and adipic acids. Results
of the reaction and some physical constants are given in
the following table:

Acylation of Sodium O,O-Thiophosphate With Acid Chlorides

FORMULA OF ACYL DERIVATIVE	YIELD (%)	n_D^{21}	d_4^{21}
$(C_4H_9O)_2PSOCOC_6H_5$	41.0	1.5015	1.066
$(C_4H_9O)_2PSOCO(CH_2)_2COOSP(C_4H_9O)_2$	35.4	—	1.466
$(C_4H_9O)_2PSOCO(CH_2)_3COOSP(C_4H_9O)_2$	78.0	—	1.158
$(C_4H_9O)_2PSOCO(CH_2)_4COOSP(C_4H_9O)_2$	26.5	—	1.1192

There are 1 table; and 10 references, 1 Polish, 8 Soviet,
1 U.S. The U.S. reference is: G. M. Kosolapoff,
Card 2/3   Organophosphorous Compounds, N. Y., 385 (1950).

L'vov State Univ.

SAKHAROVA, N.A.; LYMAR', A.I.

> Determination of austenite grain size in rail steel. Zav.lab. 29
> no.2:199-200 '63.   (MIRA 16:5)
>
> 1. Kuznetskiy metallurgicheskiy kombinat.
>   (Austenite)   (Steel--Metallography)

GOVOROV, A.A.; KOSHKIN, V.A.; GORDIN, O.V.; TUZOVSKIY, A.I.; SAKHAROVA, N.A.;
    LYMAR', A.I.

Effect of the temperature of the end of rolling on the mechanical
properties of rail steel. Izv. vys. ucheb. zav.; chern. met.
6 no.8:137-140 '63.   (MIRA 16:11)

1. Sibirskiy metallurgicheskiy institut i Kuznetskiy
metallurgicheskiy kombinat.

MIKHAYLETS, Nikolay Semenovich; GORELKINA, Aleksandra Yevseyevna;
        KOSHKIN, Vladimir Andreyevich; NIKULIN, Nikolay Grigor'yevich;
        DARUSHIN, Ratmir Ivanovich; SAKHAROVA, Nina Alekseyevna;
        LYMAR', Adol'f Ivanovich; LOSKUTOVA, Lyudviga Vladimirovna;
        RUDNEVA, Raisa Semenovna

        [Manufacture of rails at the Kuznetsk Metallurgical Combine]
        Proizvodstvo rel'sov na Kuznetskom metallurgicheskom kombinate.
        Moskva, Izd-vo "Metallurgiia," 1964. 222p.   (MIRA 17:6)

LYMAR', A.N., inzh.

Methods of treating refractory clays. Ogneupory 19 no.5:211-216
'54.   (MIRA 11:8)

1.Leningradskiy institut ogneuporov.
            (Clay) (Ore dressing)

LYMAR', A.N.

The preparation of refractory raw materials in heavy media. Ogneupbry
21 no.8:345-351 '56.   (MLRA 10:2)

1. Leningradskiy institut ogneuporov.
   (Refractory materials)

LYMAR', A.N.

131-12-3/9

AUTHOR: Lymar', A.N.

TITLE: Raw Materials (Syryye materialy). Rational Technology and Technical-Economic Characteristics of the Enrichment Process of Refractory Clays (Ratsional'naya tekhnologiya i tekhniko-ekonomicheskiye pokazateli protsessa obogashcheniya ogneupornykh glin)

PERIODICAL: Ogneupory, 1957, Nr 12, pp. 537-545 (USSR)

ABSTRACT: There are two methods of enriching clay: a wet and a dry one, each of which has certain disadvantages. Considerable interest should therefore be devoted to the combined method - the dry enrichment of clay and the additional working of what remains by the wet method. With this method it is possible to use the product of the wet method, mixed with that of the dry method, for the production of fireclay without any additional drying. Technological schemes of combined enrichment are mentioned for various types of clay in figures 1 - 3. The figures 4 and 5 show technological schemes of wet enrichment. Selection of the corresponding enrichment scheme depends on the demands made upon the raw material, on the purpose for which it is to be used, and on the economic characteristic features of the process. Table 1 shows the enrichment data of the wet, table 2 those of the dry, and table 3 those of the combined method. By suitable organiza-

Card 1/2

Raw Materials. Rational Technology and Technical-Economic Characteristics
of the Enrichment Process of Refractory Clays   131-12-3/9

        tion also the costs of enrichment can be considerably reduced.
        There are 5 figures and 3 tables.

ASSOCIATION: Leningrad Institute of Refractories (Leningradskiy institut
          ogneuporov)

AVAILABLE: Library of Congress

Card 2/2

LYMAR', A.N., inzh.; Prinimali uchastiye: YAKOVLEVA, T.I., kand.tekhn.nauk;
MALOVA, N.N., inzh.

Studies of the concentration of Satka magnesites. Trudy Inst.
ogneup. no.29:153-172 '60.   (MIRA 14:12)
                        (Satka—Magnesite)

LYMAN', A.N., inzh.; MALOVA, M.N., inzh.

Flotation of dolomitized magnesite. Trudy Inst. ogneup. no.34:28-44 '63. (MIRA 17:10)

KARPENKO, V.Ye.; LYMAR', A.O.

Mechanized harvesting of peas. Kons.i ov.prom. 16 no.5:23-24 My
'61.
(MIRA 14:5)

1. Khersonskiy sel'skokhozyaystvennyy institut (for Karpenko).
2. Sovkhoz "Gorodniy veleten'" (for Lymar').
(Peas)

L 34079-65   EEC(b)-2/EPF(n)-2/EPR/EWA(c)/EWT(1)/EWT(m)/EWG(m)/EWP(b)/T/EWP(e)/EWP(t)
Ps-4/Pu-4   IJP(c)   AT/WH/JD/JG

ACCESSION NR: AP5007151   S/0286/65/000/003/0018/0019

AUTHOR: Lymar', G. F.; Polikanov, Yu. V.; Medvedev, S. A.

TITLE: A method of growing silicon carbide single crystals. Class 12, No. 167336

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 3, 1965, 18-19

TOPIC TAGS: silicon carbide, silicon carbide single crystal, vapor grown single crystal, single crystal growing

ABSTRACT: An Author-Certificate has been issued for a method of growing silicon carbide single crystals from the vapor phase. To increase the yield of the hexagonal silicon carbide, the process is conducted in a vacuum of 10^{-3} mm Hg. In a modification of this method, single crystals are grown at 2100—2250C with a temperature gradient of 6—10C and the upper half of the crucible is filled with the initial silicon carbide, whose particle size is 0.05—1.5 mm.   [MS]

ASSOCIATION: none

SUBMITTED: 05Jun63   ENCL: 00   SUB CODE: SS

NO REF SOV: 000   OTHER: 000   ATD PRESS: 3209
Card 1/1

L 38894-66   EWT(l)/EWT(m)/T/EWP(t)/ETI   IJP(c)   AT/JD

ACC NR: AP6018572   SOURCE CODE: UR/0181/66/008/006/1948/1950

AUTHOR: Polikanov, Yu. V.; Lymar', G. F.; Zhukova, L. M.

ORG: none

TITLE: Radiative recombination in the space-charge layer of a p-n junction

SOURCE: Fizika tverdogo tela, v. 8, no. 6, 1966. 1948-1950

TOPIC TAGS: silicon carbide, radiative recombination, pn junction, space charge, forbidden band, semiconductor carrier, electron trapping

ABSTRACT: The authors extend the theory of Sah, Noyce, and Shockley (Proc. IRE v. 45, 1228, 1957), which explains the properties of p-n junctions in materials with large width of the forbidden band and low effective lifetime of nonequilibrium carriers, to include the case of recombination in the space-charge layer in the presence of several recombination channels. Expressions are obtained for the current density through the junction in terms of the densities through the individual recombination traps. This theory was checked by testing the volt-ampere characteristics and the dependence of the capacitance on the voltage of epitaxial diffusion p-n junctions produced in silicon carbide. Capacitance tests have shown that the width of the junction was (1 - 5) x 10^{-5} cm at V = 0, and the contact potential was 2.4 - 2.5 ev. The dependence of the radiation intensity on the temperature and on the current was measured and compared with the calculations based on the theory. The agreement between theory and experiment was satisfactory, and the thermal activation energy of

Card 1/2

L 38894-66

ACC NR: AP6018572 2

the radiative recombination trap (0.28 ev) was found to agree with the published activation energy for aluminum in SiC. This suggests that the aluminum atoms are responsible for the radiative recombination in these junctions. It is concluded that the ideas developed for SiC should be taken into account when analyzing characteristics of radiation from other materials with large forbidden bands. Orig. art. has: 1 figure and 4 formulas.

SUB CODE: 20/   SUBM DATE: 09Nov65/   ORIG REF: 001/   OTH REF: 003

Card 2/2

DERKACH, V.G.; LYMAR', K.N.

Magnetic coagulation of finaly impregnated magnetite ores and
its effect on ore dressing. Gor.zhur.no.12:49-55 D '55.
                                                    (MLRA 9:4)

(Magnetic separation of ores)(Magnetite)

LYMAR', K.N.

Operating efficiency of electromagnetic belt separators. Obog.
rud 4 no.6:30-34 '59.   (MIRA 14:8)
     (Magnetic separation of ores--Equipment and supplies)

LYMAR', N.P.; inzhener; SAKHMAY, M.I.; inzhener.

Changing smoke stacks on furnaces in operation. Mettalurg no.11:23-
24 N '56.   (MIRA 10:1)

1. Kuznetskiy metallurgicheskiy kombinat.
            (Open-heart furnaces--Repairing)

TURKEVICH, N.M.; LYMAR, O.F.

Substitution in the azolidine ring. Part 12: Certain S-derivatives of cyclic thioureas and their absorption spectra. Ukr. khim. zhur. 27 no.4:503-506 '61. (MIRA 14:7)

1. L'vovskiy meditsinskiy institut.
(Urea--Spectra)

TURKEVICH, N.M.; LYMAR, O.F.

Synthesis of thiazolidinone derivatives of biological interest.
Part 14: Thiazolidinone derivatives with a condensed imidazole ring,
and their hydrolysis. Zhur.ob.khim. 31 no.5:1635-1640 My '61.
(MIRA 14:5)

1. L'vovskiy meditsinskiy institut.
(Thiazolidinone)